CLAIMS

The invention claimed is:

1. A method of making an electrochromic device comprising the steps of:

providing an assembly including a first substrate and a second substrate spaced apart and joined by a seal to form a sealed chamber between inner surfaces of said substrates, one of said first and second substrates including an aperture extending between the outer surface of the substrate and the chamber;

filling said chamber with an electrochromic solution or an electrolytic solution through said aperture;

placing a plug in said aperture; and

adhering a thin plate over the plugged aperture.

2. The method of claim 1, wherein said plug is a ball.

3. The method of claim 1, wherein said plug is deformable.

4. The method of claim 1, wherein said plug is made of one of polyisobutylene, polyolefin, and butylnitrile.

5. The method of claim 1, wherein said plug is made of tetrafluoroethylene fluorocarbon, fluorinated ethylene-propylene, ethylene tetrafluoroethylene copolymer, perfluoroalkoxy fluorocarbon, fluorinated ethylene polypropylene, or copolymers thereof.

6. The method of claim 1, wherein said thin plate is transparent to UV radiation and is adhered over the plugged aperture using a UV-curable adhesive.

7. The method of claim 1, wherein said thin plate is glass.

8. The method of claim 1, wherein said thin plate is impermeable to oxygen.

9. The method of claim 1, wherein said aperture has a conical shape.

10. An electrochromic device made using the method of claim 1.

11. A window comprising an electrochromic device made using the method of claim 1.

12. A method of making an electrochromic device comprising the steps of:

providing a first substrate;

adhering a first surface of a pre-formed seal gasket onto a first surface of said first substrate proximate the periphery thereof, said seal gasket having adhesive pre-applied to a

second surface opposite the first surface, and having a release liner attached to the adhesive on the second surface of said seal gasket;

removing the release liner from the second surface of said seal gasket; and

aligning a second substrate with said first substrate and pressing a first surface of said second substrate onto the adhesive on the second surface of the seal gasket.

13. The method of claim 12 and further including the step of filling an area between the first surfaces of said first and second substrates with an electrochromic solution.

14. The method of claim 12 and further including the step of filling an area between the first surfaces of said first and second substrates with an electrolytic solution.

15. The method of claim 12, wherein the first and second substrates each include a transparent conductive layer on the first surfaces thereof.

16. The method of claim 12, wherein the seal is made of silicone, ethylene propylene diene methylene rubbers, tetrafluoroethylene fluorocarbon, fluorinated ethylene-propylene, or copolymers thereof.

17. The method of claim 12, wherein the seal is made of butyl rubber.

18. The method of claim 12 and further including the step of applying a sealant to the periphery of the joined first and second substrates.

19. The method of claim 18, wherein the sealant is impermeable to air and moisture.

20. The method of claim 19, wherein the sealant is an epoxy resin.

21. An electrochromic device made using the method of claim 12.

22. A window comprising an electrochromic device made using the method of claim 12.

23. An electrochromic device comprising an electrochromic medium having a color stability ΔE less than 10, measured in its low transmission state after being subject to continuous cycling outdoors at an angle of 5° from a horizontal condition for two years outdoors, each cycle consisting of application of sufficient potential for a sufficient time such that the window reaches its low transmission state.

24. The electrochromic device of claim 23, wherein each cycle consists of applying a voltage of about 1.2V for 20 sec. and 0.0V for 40 sec.

25. The electrochromic device of claim 23, wherein said electrochromic medium is dispersed in a cross-linked polymer matrix.

26. An electrochromic device comprising an electrochromic medium having a color stability ΔE less than 10, measured in its high transmission state after being subject to continuous cycling outdoors at an angle of 5° from a horizontal condition for two years outdoors, each cycle consisting of application of sufficient potential for a sufficient time such that the window reaches its low transmission state.

27. The electrochromic device of claim 26, wherein each cycle consists of applying a voltage of about 1.2V for 20 sec. and 0.0V for 40 sec.

28. The electrochromic device of claim 26, wherein said electrochromic medium is dispersed in a cross-linked polymer matrix.

29. An electrochromic device comprising an electrochromic medium having a color stability ΔE less than 10, measured in its high transmission state after being subject to continuous cycling outdoors at an angle of 5° from a horizontal condition for one million cycles outdoors, each cycle consisting of application of sufficient potential for a sufficient time such that the window reaches its low transmission state.

30. The electrochromic device of claim 29, wherein each cycle consists of applying a voltage of about 1.2V for 20 sec. and 0.0V for 40 sec.

31. The electrochromic device of claim 29, wherein said electrochromic medium is dispersed in a cross-linked polymer matrix.